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The explanation of the great increase in the number of known species is simple. The country near the settled towns of the Philippines, being usually low land and under cultivation, is poor collecting ground. Around Manila, for example, but few mosses, lichens, or hepatics, could be obtained, and these of comparatively little interest. But the settled conditions in such regions as northern Luzon, and the greater propensity among recent botanists for climbing mountains, have been responsible for most of the additions, as in ravines and especially at high levels, a bryologist reaps a rich harvest.

The general problems give very much the same results as with flowering plants, the flora being preponderatingly Malayan. A much smaller number of species have distinctly northern affinities, still fewer are Australian, being known only from the Philippines and that continent and regions still more remote. There are quite a number as yet known only from the Himalayan region and these Islands. Among the hepatics, several seem to have Polynesian affinities.

There is again, as with flowering plants, a high proportion of endemic species, with a very few endemic genera. To illustrate, the second last list of determinations of hepatics indicated 24 new species, the last of mosses 21, although both also added largely to the number previously known from other countries, but not from the Philippines. On the other hand, the last list of hepatics, while adding one genus and 25 species to our known flora, does not specify a single one as new. It is in every way probable that the totals given above will ultimately be very greatly increased.

BUREAU OF SCIENCE, Manila, P. I.

Review

Müller, K. Die Lebermoose Deutschlands, Oesterreichs und der Schweiz. I. Abteilung. Rabenhorst's Kryptogamen-Flora, zweite Auflage, Band VI. Leipzig (Eduard Kummer), 1906-1911. 870 pages, with 363 text-figures.

Dr. Müller's treatment of the liverworts of Germany, Austria, and Switzerland is one of the most important works on European Hepaticæ which have been published during recent years. It is by no means a local flora, as the title would perhaps imply. All the European species are considered, although those known to occur within the assigned limits are more fully discussed than the others. The author even includes a few species from Africa, Asia, and arctic America with the idea that they may yet be found in Europe. The sequence followed is essentially that of Schiffner in Engler & Prantl's "Die natürlichen Pflanzenfamilien." The present volume includes the Ricciaceæ, the Marchantiaceæ, the Jungermanniaceæ anakrogynæ, and the group Epigonanthæ of the Jungermanniaceæ akrogynæ. The remaining groups of this last family, together with the Anthocerotaceæ, are reserved for a second volume.

Although, as the introduction states, the character of the work is largely taxonomic, the other aspects of the subject are by no means neglected. Preced-

ing the purely descriptive portions of the volume and occupying the first 137 pages is a series of chapters dealing with the relationships of the Hepaticæ to other plants, the general characteristics of the group, their structure, their biology, and the various systems of classification which have been proposed. The descriptions are unusually full and clear, and keys for the determination of specimens are everywhere inserted. Practically every species occurring within the assigned limits of the work is figured in more or less detail, and the majority of the illustrations are from original drawings, either by the author himself or by P. Janzen.

When the great similarity between the hepatic flora of Europe and that of North America is remembered, it will be seen at once that the present publication is of the utmost importance to students on this side of the Atlantic. The first volume includes descriptions of nearly 250 species; considerably more than half of these are already known from North America, and it is probable that a good many of the others still await discovery.

The genera recognized and the names applied to them are for the most part familiar to American students. It should be noted, however, that the generic names of S. F. Gray are not accepted, *Pallavicinia* appearing as *Blyttia* and *Moerckia*, *Riccardia* as *Aneura*, *Nardia* as *Alicularia* and *Eucalyx*, and *Mylia* as *Leptoscyphus*. One generic name which is open to criticism is *Haplozia*, in spite of the fact that many other writers are showing a tendency to use it. As defined by the author *Haplozia* is essentially the equivalent of *Jungermannia*, as restricted by Howe in his "Hepaticæ and Anthocerotæ of California." The name is due to Dumortier who, however, spelled it "*Aplozia*." He originally applied it in his "Sylloge Jungermannidearum" of 1831 to a subgenus under *Jungermannia*, and it was not formally published as a genus until 1874, when he issued his "Hepaticæ Europæ." In its subgeneric sense *Aplozia* contained fifteen species, which recent writers distribute among the genera *Mylia*, *Jame-soniella*, *Jungermannia*, and *Nardia*. In its original generic sense it contained twenty-three representatives of the same genera and also two members of the genus *Southbya*. It is evident, therefore, that *Aplozia* cannot be recognized as a modern genus without extensive restrictions and emendations, and the difficulty is increased by the fact that Dumortier indicated no definite species as a generic type. Meanwhile, in 1845, Nees von Esenbeck published in the "Synopsis Hepaticarum" the monotypic genus *Liochlaena*, based on *Jungermannia lanceolata*, a species which Dumortier and all subsequent writers who accept *Aplozia* include under this genus. According to the Vienna Rules, *Liochlaena* has a distinct right of priority over *Aplozia* and ought to be adopted if authors agree that *Jungermannia* must be given up altogether as a generic name.

With respect to the definition of species Dr. Müller occupies a somewhat conservative position. Although he recognizes a large proportion of the species accepted by Lindberg, Schiffner, and other writers, he looks upon many of them as mere variations, due to unusual external conditions. Such species he either reduces directly to synonymy or describes as varieties or forms. He is further careful to distinguish undoubted species from those which he designates "kleine Arten," which expresses about the same meaning as the "elementary species"

of De Vries. A "kleine Art" is closely allied to some other species, differing from it in a very few particulars, while an undoubted species has more numerous and more definite points of distinction when contrasted with its relatives. For example, in the genus *Lophozia*, *L. porphyroleuca* (Nees) Schiffn. is described as a variety of *L. ventricosa* (Dicks.) Dumort., *L. longiflora* (Nees) Schiffn. is given as a "kleine Art" to be segregated from *L. ventricosa*, while such a species as *L. excisa* (Dicks.) Dumort. is regarded as undoubtedly distinct from *L. ventricosa*. Of course the conception of a species is largely subjective, and it must be admitted that the views advanced are based on definite principles, even if some of them can hardly meet with unqualified acceptance.

It is a pleasure to recommend Dr. Müller's book to students of the Hepaticæ. It is based on a first hand knowledge of the group, it gives evidence of prolonged and painstaking study, and the conclusions reached in doubtful cases are the result of sound and critical judgment.

ALEXANDER W. EVANS

[The work may be ordered from Eduard Kummer, Leipzig, Germany, at 33 Marks, 60 Pf.]

MEETING OF THE SULLIVANT MOSS SOCIETY

The eighth annual meeting of the Sullivant Moss Society was held in the Business High School building at Washington, D. C., on December 28th, in connection with the yearly meeting of the American Association for the Advancement of Science.

The forenoon was devoted to arranging the various exhibits, and to a renewal of acquaintanceships, while the regular programme of papers was held in the afternoon. The following is a list of the various exhibits.

Miss C. C. Haynes and Mrs. Smith sent advance sheets of a check-list of the Hepatics of North America, soon to be issued by them. Mrs. Smith also sent a number of drawings, plates, and other articles illustrative of the work of the "BRYOLOGIST." Mr. George B. Kaiser and Mrs. Gadsby showed an extensive series of specimens, each mounted on a separate card and enclosed in a cover, designed to facilitate either exhibition or reference without damage to the specimen. Many of the specimens were accompanied by colored drawings, showing dissections of the various species.

Miss Carlotta H. Browne exhibited specimens of different species of the *Bartramiaceae*, illustrative of her paper on the genus *Bartramia*, and Mr. A. S. Foster contributed a suite of lichen specimens to accompany his article upon the *Stictae* of the Pacific Coast. Miss Lorenz also kindly forwarded a book containing original drawings of the various species of New England Hepatics, comprising a nearly complete representation of the species of that region. (158 of the 165 species.)

The formal programme opened at half past two o'clock, Dr. A. W. Evans presiding, and the following papers were presented.

1. The Biological Relations of Certain Lower Fungi, Prof. Bruce Fink.
2. A New *Frullania* from Florida, Dr. A. W. Evans.